

# Spontaneous fission properties of $^{262}\text{Rf}$

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In the time since our experiment on the spontaneous fission properties of  $^{262}\text{Rf}$  was last reported<sup>1</sup>, we have obtained more data and have published the results<sup>2</sup>. We have measured the mass and kinetic-energy distributions of 200 pairs of coincident fission fragments from the spontaneous fission (SF) of  $^{262}\text{Rf}$ . The  $^{262}\text{Rf}$  was produced via the  $^{244}\text{Pu} (^{22}\text{Ne}, 4n)$  reaction with a production cross section of  $\sim 0.7$  nb using 114.4-MeV projectiles. The kinetic energies and times of the coincident fission fragments were measured using our rotating wheel system. From these data the half-life, mass, and kinetic-energy distributions were derived. The total kinetic-energy (TKE) distribution (Fig. 1) appears to consist of a single component with a most probable pre-neutron-emission TKE of  $215 \pm 2$  MeV. The mass distribution (Fig. 2) is symmetric with a full width at half maximum of about 22 mass numbers. These results are consistent with trends observed for other trans-berkelium spontaneously fissioning isotopes. We determined the half-life to be  $2.1 \pm 0.2$  s by measuring its spontaneous fission decay. We also attempted to observe the alpha decay of  $^{262}\text{Rf}$  by searching for alpha decay correlated in time with SF from the alpha daughter, 1.2-ms  $^{258}\text{No}$ . We observed no such decays and have set an upper limit of 0.8% (68% confidence level) on the alpha decay branch of  $^{262}\text{Rf}$ .

## References

1. D.C. Hoffman et al.; K.E. Gregorich et al., LBL-35768, Annual Report (1993).
2. M.R. Lane et al, Phys. Rev. C 53, 2893 (1996).

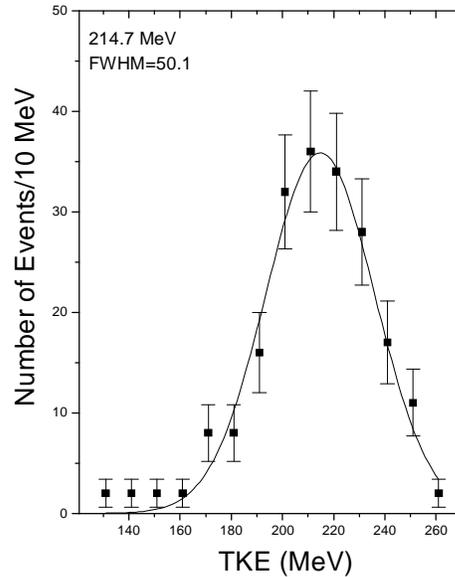


Fig. 1. Gaussian fit to the pre-neutron-emission TKE distribution from the SF of  $^{262}\text{Rf}$ .

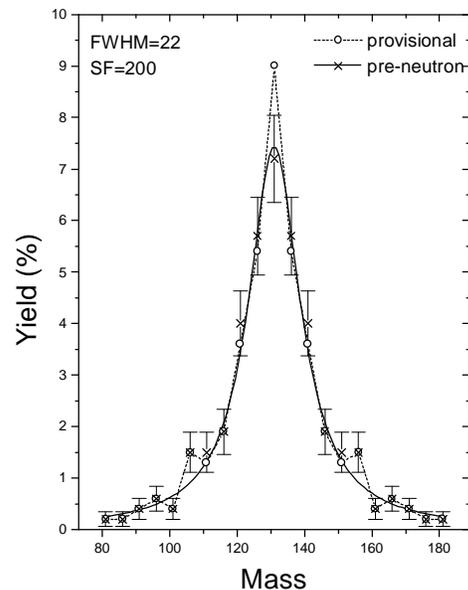


Fig. 2. Lorentzian fit to the pre-neutron-emission mass-yield distribution for  $^{262}\text{Rf}$ . Also shown is the provisional mass-yield curve to which no neutron correction was applied. The bars indicate  $1\sigma$  error limits.